

KEY IDEAS ABOUT MATHEMATICAL COMMUNICATION

Levels of Mastery

Mathematical communication is essential at each of David Sousa's six levels of mastery: connects to prior knowledge, uses concrete materials to show a concept; illustrates concept by drawing; translates into mathematical notation; applies knowledge to real world situation; teaches concept to others (p52)

Solving problems through communication

Mathematics is not simply about computation or a checklist of concepts and skills – it's about solving problems using communication.

Language Matters

Teachers need to be specific in the vocabulary they choose. It needs to be carefully modelled and shared.

Is it visible?

Do the students understand? How do we know they understand? Students need to be able to share and explain their understanding of concepts. "If you can't explain it simply, you don't understand it well enough".

Explain and Defend Thinking

"It's the thinking that students do while talking that leads to understanding and fluency in maths". Students need to explain, argue, critique, defend and discuss ideas.

We need to uncover misconceptions

Students are taught to read left to right in English, but often in maths we need to start in the middle and put the pieces of the puzzle together. EALD students may have misconceptions because words sometime have to meanings eg the face in our heads and the face of a cube.

Maths is Everyone's Second Language

The need to match words with the symbols means that we need to teach explicitly the specific maths vocab as well as the sentence structures of academic maths.

Frameworks for Teaching

Teach academic maths vocabulary the same way you would teach in a language class: explain the new word; students restate in their own words; students create non-linguistic representations; students sort or categorise a few words; students discuss words with a partner; they play games to review or explore words (p54).